First Report on the Joint American Council of Life Insurers (ACLI) / International Actuarial Association (IAA) Research Project Concerning the Potential Interaction of Methods of Asset Measurement under IAS 32 / 39 with Various Liability Measurement Methods and the Effect of this Interaction on the Financial Statements of Life Insurers

Prepared for the IASB Roundtable

Concerning IAS 32/39 Issues in London, England

on March 14, 2003

March 10, 2003

Sir David Tweedie
Chair
International Accounting Standards Board
30 Cannon Street, London EC4M 6XH,
United Kingdom

Dear Sir David:

This letter is submitted on behalf of the American Council of Life Insurers (ACLI) and the International Actuarial Association (IAA) as a first report of early results from our joint research on the effects of the measurement of both insurance contracts exempt from IAS 32, *Financial Instruments: Disclosure and Presentation*, and IAS 39, *Financial Instruments: Recognition and Measurement* (IAS 32/39) and investment contracts subject to IAS 32/39 in conjunction with the measurement of financial assets under IAS 32/39.

Given that the Board of the IASB is conducting Roundtable discussions on IAS 32/39, it was felt that it would be useful to the Board to become aware of the preliminary results of the joint research project.

The ACLI is the principal trade association of life insurance companies in the U.S., and its 383 members represent, in the aggregate, 73 percent of the assets of all domestic life insurers in the U.S.

The IAA represents the international actuarial profession. The forty-seven full member actuarial associations represent more than 95% of all actuaries practicing around the world. The IAA promotes high standards of actuarial professionalism across the globe and serves as the voice of the actuarial profession when dealing with other international bodies on matters falling within or likely to have an impact upon the areas of expertise of actuaries.

Neither an Official Public Statement of the IAA nor of the ACLI

The research in this first report was conducted by one of the members of the Actuarial Standards Subcommittee of the International Actuarial Association. The interim research was reviewed by the Chairman of the IAA's Committee on Insurance Accounting and by the two co-Chairmen of the Actuarial Standards Subcommittee of the IAA. The Chairman of the ACLI Accounting Committee, other staff designated by the ACLI, along with American actuaries and accountants, also reviewed the interim research.

Before publication, the research was also made available to all members of the drafting group of the Actuarial Standards Subcommittee of the IAA. While there was widespread review of this research by certain members of the IAA active in the IAA's consideration of IASB insurance accounting and related actuarial standards issues, this review does not constitute the necessary due process for this paper to be considered a Public Statement of the IAA. A Public Statement of the IAA can only be made after a due process involving a formal vote of the members of the IAA. Until the required process has been completed, all statements in this paper concerning the opinions of the IAA should be read only as the opinions of those members of the IAA committees who have participated in preparing this paper.

At the date of publication, the research had also not completed the process required for it to be considered an official public statement of the ACLI.

Purposes of the Joint Research Project

Because of the importance of the Insurance Project to the insurance industry, the ACLI and IAA believe that a thorough analysis and understanding of the interaction of the measurement of insurance contracts exempt from IAS 32/39 and investment contracts subject to IAS 32/39 with the measurement of financial assets under IAS 32/39 is critical to the ultimate success of this Project. Both the diversity of current national standards for insurance that will be used in Phase 1 of the Project and the objective of the IASB to adopt a single standard for all insurance contracts in Phase 2 of the Project make this an important endeavor.

Our specific purposes are as follows:

♦ To improve the understanding of the measurement criteria for insurance contracts under:
  ▪ Current National GAAP for insurers using US GAAP as an example of possible convergence issues that the IASB is examining;
  ▪ Current IASB proposals for Phase 2 based on fair value (FV) concepts; and,
  ▪ Alternative ACLI proposals for Phase 2 based on held-to-maturity (HTM) concepts
♦ To identify potential earnings measurement issues
♦ To illustrate the interaction of the measurement for both insurance liabilities and investment contracts issued by insurers with financial assets measured under IAS 32/39
♦ To provide an educational tool both for the Board and for the insurance industry to better understand the practical issues that need to be addressed.

Background

A single life insurance contract was considered for this first report of the Joint Research Project, a single premium whole life-contingent annuity issued to a male aged 65 (A more complete rationale for choosing this contract is contained in the detail section of this report). This contract was selected because its financial performance is dependent on only two main variables (mortality rates and investment returns) with insurer expenses having a relatively minor effect. The contract is available in most countries in the world in which there are life insurers. Whole life annuities are important contracts in most of those countries. Other than the guaranteed lifetime annuity payment determined from a given single premium, there are no embedded guarantees, options or derivatives in this contract. The contract was chosen both to illustrate the importance of consistent measurement of assets and liabilities and to illustrate what features a liability measurement method must contain at a minimum to produce income that reflects insurance business reality.

A single investment contract was considered for this first report, a single premium 20-year annuity certain. This contract was selected because its financial performance is dependent on only one variable (investment returns), with insurer expenses again only having a relatively minor affect and because it is a long duration contract.

In the United States, there is a deep liquid market for securities that can be aggregated to have the same expected cash flow characteristics as the expected cash flow under each of these contracts. The same is true in many, but not all economically developed countries. The existence of such deep liquid securities' markets is certainly not a fact in lesser-developed countries. The difficulties in obtaining fair values, in the absence of deep liquid markets where even modest amounts of securities that are offered for sale can move prices materially, may add to the reasons for the development of insurance and investment liability methods that are consistent with the amortized cost asset measurement methods allowed under IAS 32/39.

These annuities are assumed to have been issued on December 31, 1970 and to have been exposed to the fluctuations in interest rates that occurred since that time in order to examine these methods under actual conditions.

Over the more than three decades since 1970, there were:
- periods of rising and falling interest rates;
- periods of expanding and narrowing yield spreads between bonds of different qualities; and
- periods in which the yield curve was positively sloped, relatively flat or inverted.

This diversity of financial experience (documented in Appendix 2) was felt to be very useful in examining the ability of various combinations of liability and asset

measurement bases to be used to assess the various earnings measurements of the entity to see which most closely reflected business reality.

Summary Conclusions Reached from the Research Completed to Date

A.   Impact on earnings when assets used by the insurer to back the annuity liability have expected cash flows with characteristics that closely match the expected cash flows from the annuity and actual experience emerges as priced:

1. There is a liability measurement method that produces earnings reasonably reflecting the underlying business reality for the annuity investigated when assets are measured at amortized cost (called the *"Held to Maturity"* liability measurement method in this paper) and another liability measurement method that also reasonably reflects the underlying business reality when assets are measured at fair value (called the *"Fair Value"* liability measurement method in this paper). Two HTM and FV methods were reviewed; the second one is used throughout this report; for a description of "Method 2", see Appendix 1, pages 26-27. The income from each of these methods is broadly similar in magnitude to the income obtained using current US GAAP. Chart 1[1] illustrates the income patterns from the three methods (using the same scale as used in Chart 2 to illustrate the extreme earnings volatility illustrated in Chart 2).

CHART 1 - Similarly Valued Assets & Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
**Mortality Experience = Pricing**
HTM/FV Valuation Method 2

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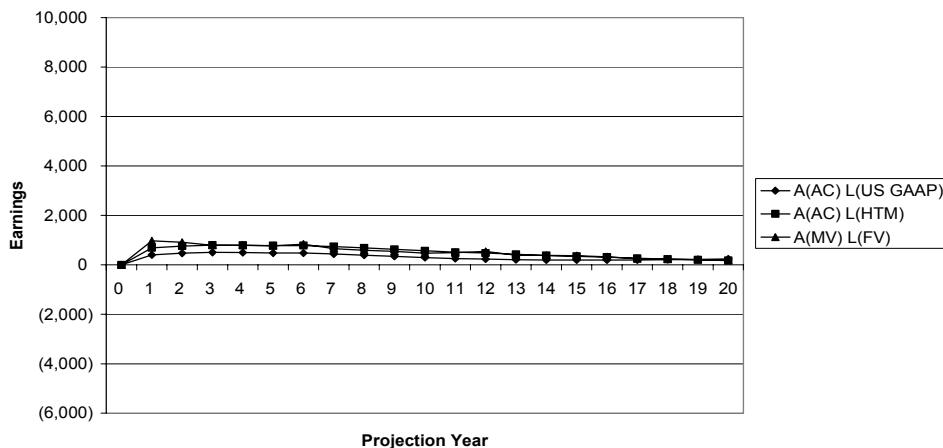
[1] Each line in Chart 1 and subsequent charts represent earnings that emerged from our model under a specific combination of asset and liability valuation. The legend to the right of the graph indicates valuation method used for both assets (AC=amortized cost, MV=market value) and liabilities (US GAAP=US GAAP, HTM = held-to-maturity, FV=fair value).

2. If assets and liabilities are **not** measured consistently, in a volatile economic environment the earnings of life insurers will **not** reflect the underlying business reality to such an extent that even an informed user of financial statements may **not be able to discern** the underlying business reality. Note that the "financial reporting noise" from changes in interest rates completely overwhelms the business reality. Note also that the earnings produced when assets are measured at fair value and liabilities are measured at amortized cost move in exactly the opposite direction of earnings produced when assets are measured at amortized cost and liabilities are measured at fair value.

When significant proportions of the assets used by the insurer to back the liabilities are designated as having different attributes (some amortized cost, some available for sale, or some trading), the earnings of life insurers may not reflect the underlying business reality if the liabilities are measured using solely either the "Held to Maturity" or the "Fair Value" method. While a third consistent liability measurement method that may produce earnings that reflect the underlying business reality when assets have mixed attributes has been conceptualized, such a method has not yet been investigated under this research project. Such research is expected to be undertaken in the near future.

Chart 2- Dissimilarly Valued Asset & Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience = Pricing
HTM/FV Valuation Method 2
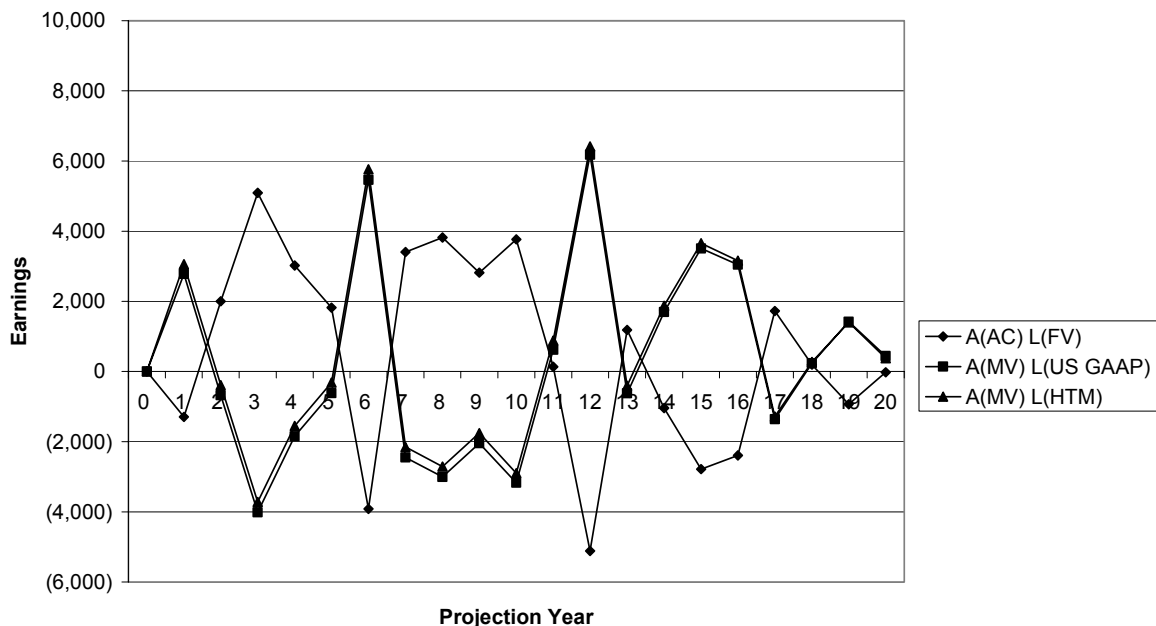
3. When both assets and liabilities are valued consistently, the incomes reported using either the "Held to Maturity" liability measurement method or the "Fair Value" liability measurement method have similar patterns and magnitude. The Fair Value method incomes have slightly more volatility, especially in years with large interest rate changes when the expectations about liability and asset cash flows are reflected. The income under each method is greater in the early years and smaller in the later years than the income reported under US GAAP due to the build up of provisions for adverse deviation in the early years in US GAAP. (Note that this chart contains the same data as Chart 1 but is scaled vertically so that the differences in earnings can be more easily seen and extended to 30 years so that possible convergence issues can be examined.)

CHART 3 - Similarly Valued Assets & Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience = Pricing
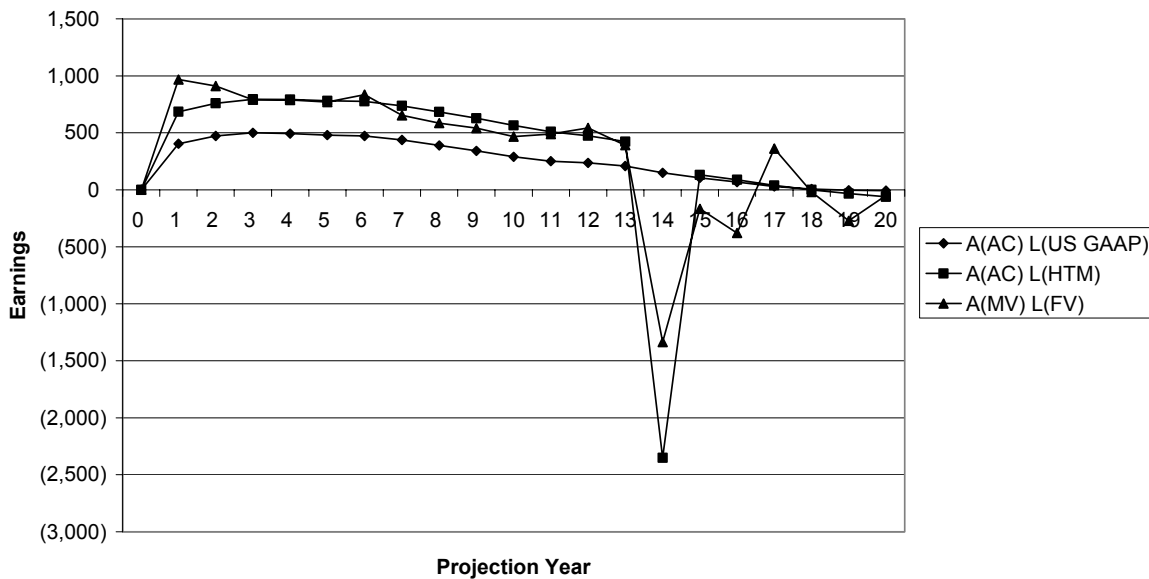**HTM/FV Valuation Method 2**
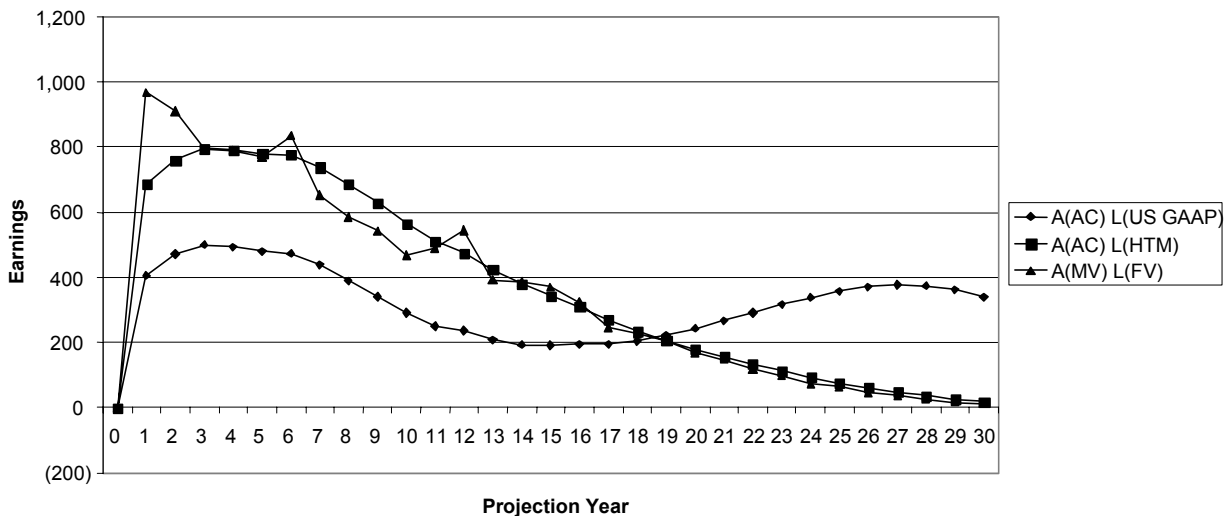
B.   Impact on earnings when assets used by the insurer to back the liabilities have expected cash flows with characteristics that closely match the expected cash flows from the liabilities and actual experience *does not* emerge as priced for:

4. When both assets and liabilities are valued consistently, the earnings reported using either the "Held to Maturity" liability measurement method or the "Fair Value" liability measurement method have similar patterns and similar magnitudes when

the expectations about liability and asset cash flows are not realized and "losses are recognized". Chart 4 illustrates the realization in year 14 that mortality expectations were inadequate (when information in the form of a new industry wide annuity mortality table was published); but not so inadequate as to result in immediate loss recognition under US GAAP.

Note that the ACLI and the IAA have identified an alternative "loss recognition" methodology that would have resulted in the same loss being recognized under either method in year 14; but illustrations of this alternative methodology are not yet available. For both FV and HTM, the loss recognition criteria and methodology may require additional guidance from the IASB or the IAA.

CHART 4 - Similarly Valued Assets & Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience <> Pricing
**HTM/FV Valuation Method 2**

C.   Impact on earnings when assets used by the insurer to back the liabilities have expected cash flows with characteristics that *do not* closely match the expected cash flows from the liabilities:

5. The more the expected asset and liability cash flows (including MVMs) differ, the more divergent are the patterns and magnitudes of the earnings reported using the "Held to Maturity" liability measurement method and the "Fair Value" measurement method, **even when best estimate mortality is realized.** While the earnings patterns generally move in the same direction, their swings are much greater under

the fair value method, which gives immediate recognition to the mismatch between expected asset and liability cash flows than under the HTM method. Volatility due to changing interest rates may be more noticeable especially in "thin" markets, i.e., markets that are neither deep nor liquid.

CHART 5 - Similarly Valued Assets & Liabilities
Long Bond Strategy
Mortality Experience = Pricing
HTM/FV Valuation Method 2
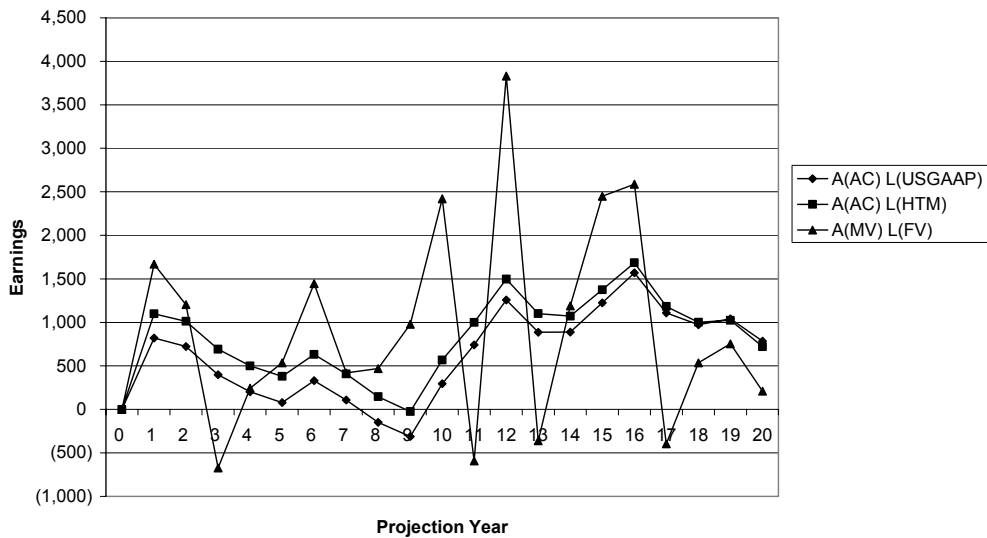
6. The more the expected asset and liability cash flows differ, the more divergent are the patterns and magnitudes of the earnings reported using the "Held to Maturity" liability measurement method and the "Fair Value" measurement method. These divergences in income patterns and magnitudes become larger when the expectations about liability cash flows are **not** realized.

CHART 6 - Similarly Valued Assets & Liabilities
Long Bond Strategy
Mortality Experience <> Pricing
HTM/FV Valuation Method 2

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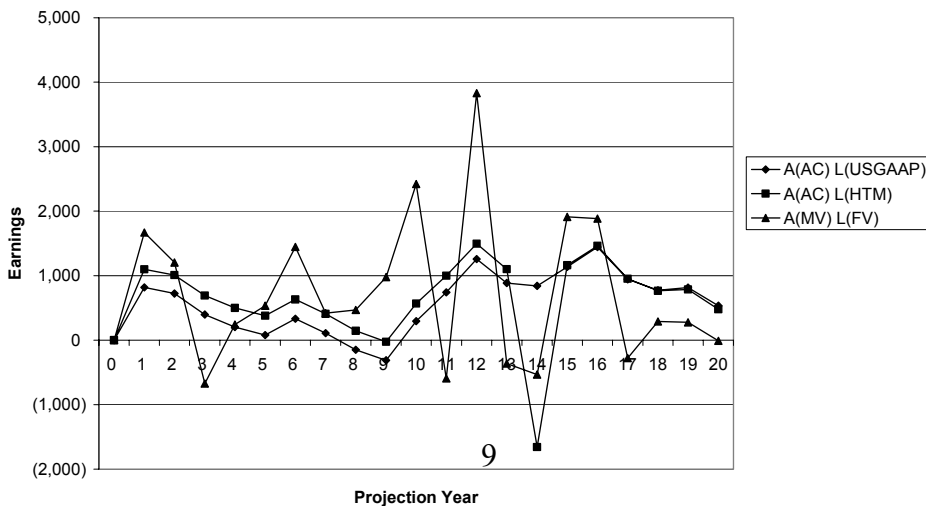
D. Balance sheet impact and considerations:

7. The balance sheet produced when assets and liabilities are measured consistently is much more stable over time when assets are measured at amortized cost and liabilities are measured using the "Held to Maturity" method than when assets are measured at fair value and liabilities are measured using the "Fair Value" method *even when conditions are such as to produce the same pattern and magnitude of reported earnings under the two methods.* This may mean that the reader of the financial statements needs to be more sophisticated in the use of analytical tools to discern the underlying business reality when assets and liabilities are reported at fair value.

Chart 7: Balance Sheet Values
Based on Similarly Valued Assets and Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience = Pricing
HTM/FV Valuation Method 2
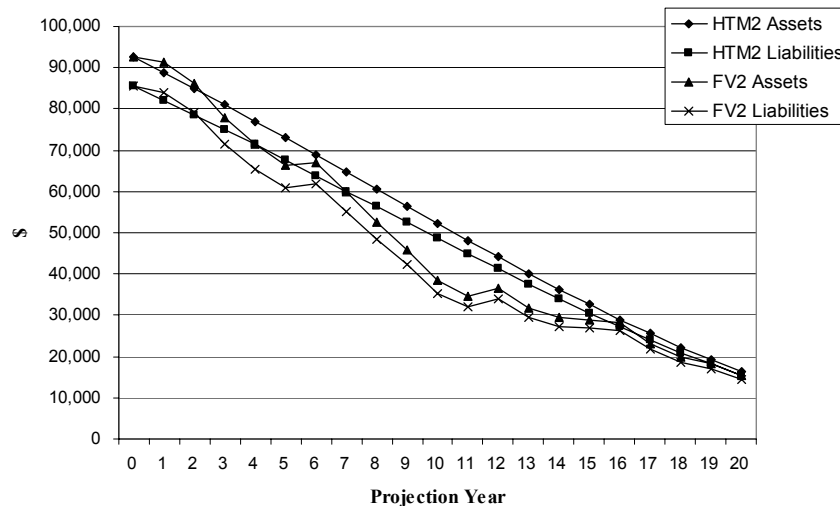
IAS 32/39 currently allows financial assets to be designated using any of three measurement bases (held to maturity, available for sale, and trading). The IASB is currently considering allowing assets to be designated as held to maturity, available for sale or trading at the date of first application. The Board is also proposing that insurance liabilities be measured using national standards during

Phase 1 of the insurance contracts project and be measured using a fair value method yet to be fully defined at a later date (Phase 2). The IASB also proposes to allow insurers to adopt "improvements" to current national standards during the period between first time application and Phase 2. Two important considerations regarding the introduction to Phase 1 and Phase 2 that are indicated as a result of this research are:

a. Great care needs to be taken in the designation of asset measurement bases for first time application depending on the characteristics of the national insurance liability measurement standard.

b. Consideration should be given by the IASB to permit re-designation of asset measurement bases at the time any material "improvement" in liability accounting is adopted (including the adoption of Phase 2).

The exposure draft of the amendments to IAS 32/39 proposes to allow financial liabilities to be designated using either of two measurement bases (amortized cost or fair value). The Board has tentatively decided that insurance contracts must have a single valuation basis, tentatively identified as "fair value". Given the conclusion of the joint research group of the ACLI and the IAA about the need for consistent measurement of asset and liability bases as a prerequisite for earnings that reflect business reality, the Board should consider developing alternative liability measurement bases for insurance contracts as long as it allows alternative measurement bases for financial assets.

## E.	Implications for Investment Contracts

8. Based on initial results for a 20 year annuity certain contract, that is, a long duration pure investment contract that would fall within the measurement standards of IAS 32/39, similar earnings results occurred when the assets and liabilities are measured consistently and the expected liability cash flows tightly match the expected asset cash flows. As a result, the IASB might consider the overall results presented here as they affect the measurement of investment products in their deliberations on IAS 32/39.

**CHART 8 - Similarly Valued Assets & Liabilities**
Corporate Strips Strategy: Invest cash pro-rata
20-year Annuity Certain
HTM Valuation Method 2
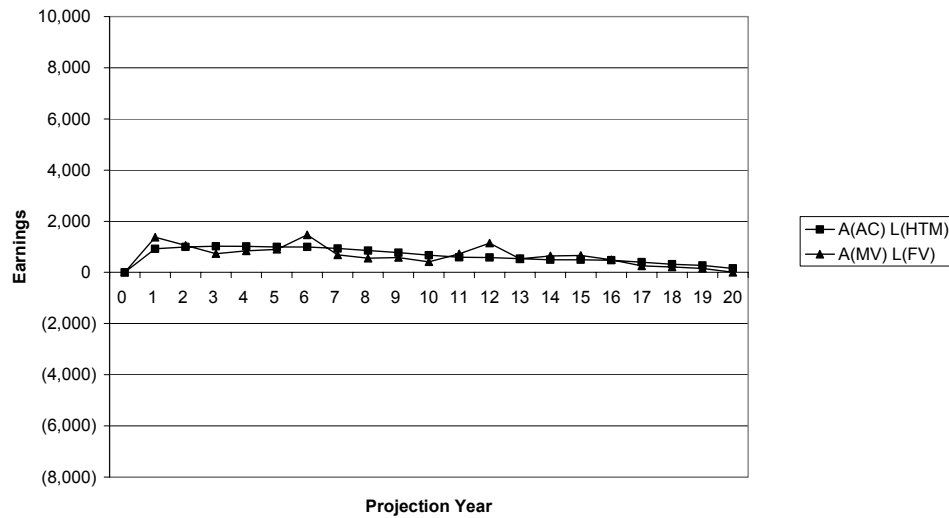
9. Based on initial results for the same 20 year annuity certain contract, dissimilar earnings results would have occurred when the assets and liabilities are not measured consistently, even when the expected liability cash flows tightly match the expected asset cash flows. **Once again the earnings results move in the opposite direction depending on whether it is the assets or the liabilities that are fair valued.**

Chart 9- Dissimilarly Valued Asset & Liabilities

Corporate Strips Strategy: Invest cash pro-rata
20-year Annuity Certain
HTM Valuation Method 2
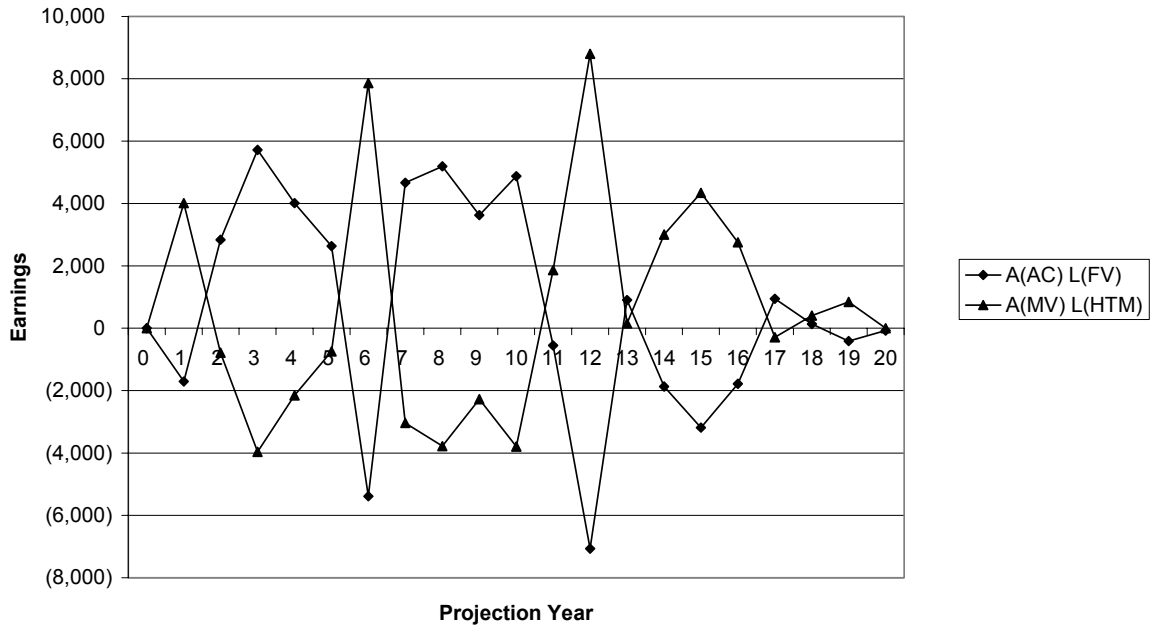
Details of Investigation into Earnings Emergence from the Sale of a Single Premium Life Annuity

The IASB is proposing to adopt an insurance contract accounting standard that is based on fair value concepts. The life insurance industries of several countries have reacted by asserting that such an accounting standard can introduce spurious volatility in the earnings of insurers. The ACLI proposed that the IASB consider an insurance contract accounting standard that is based on a "Held to Maturity" concept (in which interest rates would be locked in at the date of issue of the contract) under which there would be immediate "loss recognition" once it was recognized that experience more adverse to that assumed at the date of issue could reasonably be expected in the future.

For ease of comparison, the methods used in this paper result in the same liability at issue and the same MVMs at issue under both the HTM and FV methods. While the charts in this paper have been based on the premise that HTM interest rates would continue to be locked-in for the life of the contract, preliminary work suggests that unlocking the interest rate at the time of "loss recognition" to reflect then current yields on the incremental liability required would result in similar losses being recognized to

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those under the FV method. We intend to conduct further research related to this issue.

The ACLI and IAA chose a single premium life annuity contract to study both methods because it is a relatively simple life insurance product available in many countries and because the product contained no guarantees, embedded options or embedded derivatives other than the guaranteed level of annuity payments. It was felt that such a simple product was a good test of the ability of any proposed accounting system to produce earnings that reasonably reflected the characteristics of various accounting models.

Actuaries at the ACLI and IAA have priced a single premium whole life annuity that pays an annual income of $10,000 sold to a male aged 65 on December 31, 1970 in the US. In pricing the product, the actuaries tried to reflect then current industry practices concerning expected mortality, expenses, commissions, and the pricing interest rate used in the premium calculation based on then current interest rates.

The one area that was changed in making the premium calculation was to use a typical profit objective currently used, based on the statutory risk based capital required during the life of the contract. This change was made because it was anticipated that other examples of specimen contracts sold under the conditions and knowledge available at other times in the past might be useful to illustrate. It was decided to use a profit objective typical of current product pricing at all these past dates in order to make the results as comparable as possible with differences solely due to the interest rates prevailing at (and after) issue.

Appendix 1 shows the full details of the product pricing and other model assumptions. The reason for choosing the end of 1970 as the first issue date considered is that a complete series of US Treasury yields is available at all year end dates from that point on, as are a complete series of yields on corporate long term bonds. Further, during the intervening three decades, there have been periods of:
- Slowly rising interest rates and slowly falling interest rates,
- Rapidly rising interest rates and rapidly falling interest rates,
- Strongly positive yield curves, flat yield curves and inverted yield curves,
- Periods of relatively wide quality spreads between corporate bonds and Treasury bonds as well as periods of relatively narrow spreads.

Extensive details of the Treasury yields since 1970 as well as the yields on long corporate bonds are found in the table and charts contained in Appendix 2.

At the date of issue of the contract, initial liabilities were calculated using an interest rate that reasonably reflected the A corporate rate less expected defaults and asset

administration expenses. The A rate was used because it was representative of the level of risk that the life insurance industry was willing to accept during most of the period in question. In calculating life insurance liabilities, expected payments were increased by adding a margin to each expected payment such that the "profit at issue should be zero".

The ACLI and the IAA feel that their fair value liability calculation basis does reflect actual market conditions. Both the ACLI and the IAA recognize that the quality implied in the yield curve to be used for insurance liability calculations has not yet been determined by the IASB and that some feel that the risk free rate should be the reference yield curve. While the results have not been included in this document, the insurance liabilities were separately calculated using the risk free rate as well. Using a risk free rate would result in significant "losses at issue" on products where profits were anticipated at issue (and obtained in reality). The ACLI and IAA felt that this result was not what the IASB intended and as a result, believe that negative market value margins would have been required in this case to bring the loss at issue to zero.

However, it may be that the IASB feels that the use of the risk free interest rate curve should be stipulated and that negative MVMs should be prohibited. If the IASB wishes to examine the conclusions in this paper if risk free rates are stipulated, the ACLI and IAA are willing to provide such information.

Impact on earnings when assets used by the insurer to back the liabilities have expected cash flows with characteristics that closely match the expected cash flows from the liabilities and actual experience emerges as priced for.

Chart 10 shows the pattern of the expected future best estimate benefit and expense payments at the date of contract issue (in white) together with the corresponding with best estimate of asset cash flows reflecting "market value margin" and capital requirements on each such payment (in black) such that the profit at issue was zero.

Chart 10 - Cash Flow Match at Issue
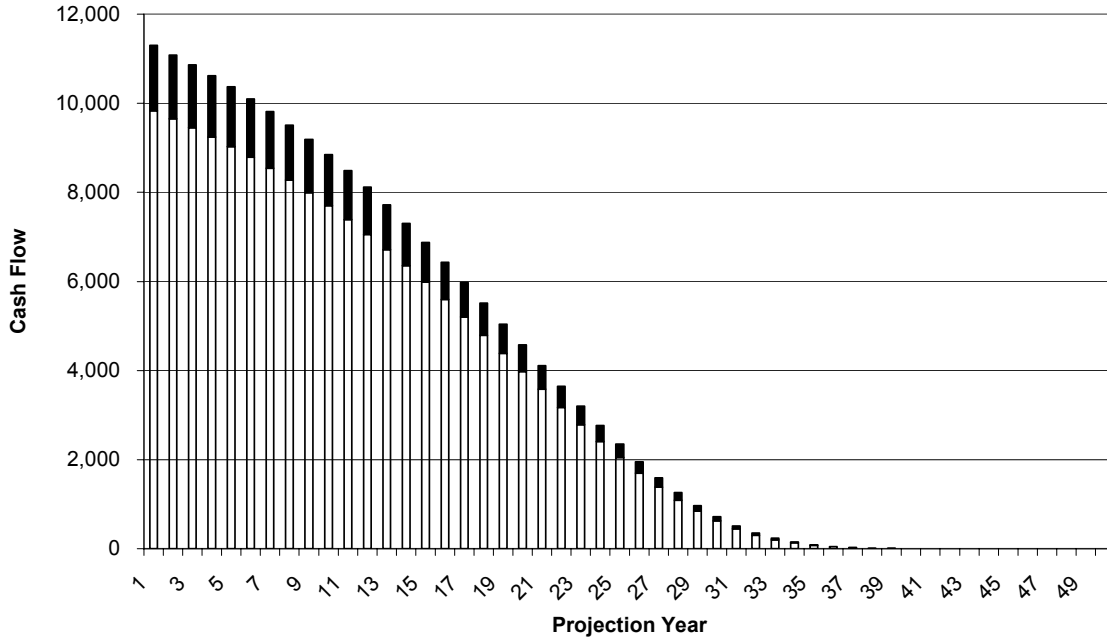Corporate Strips Strategy: Invest cash pro-rata to liability CF

Chart 11 shows the earnings patterns that would be produced when experience under the policy emerges exactly as expected, both when the assets are measured at amortized cost and the liabilities are measured using either the "Held to Maturity" method or current US GAAP, as well as when the assets are valued at fair value and the liabilities are also valued at fair value. It shows that the earnings patterns under all three consistent measurement combinations are similar. It also shows that the use of a fair value measurement basis for these annuity liabilities can introduce volatility. The reasons for this volatility will be reviewed in our future research.

CHART 11 - Similarly Valued Assets & Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience = Pricing
**HTM/FV Valuation Method 2**
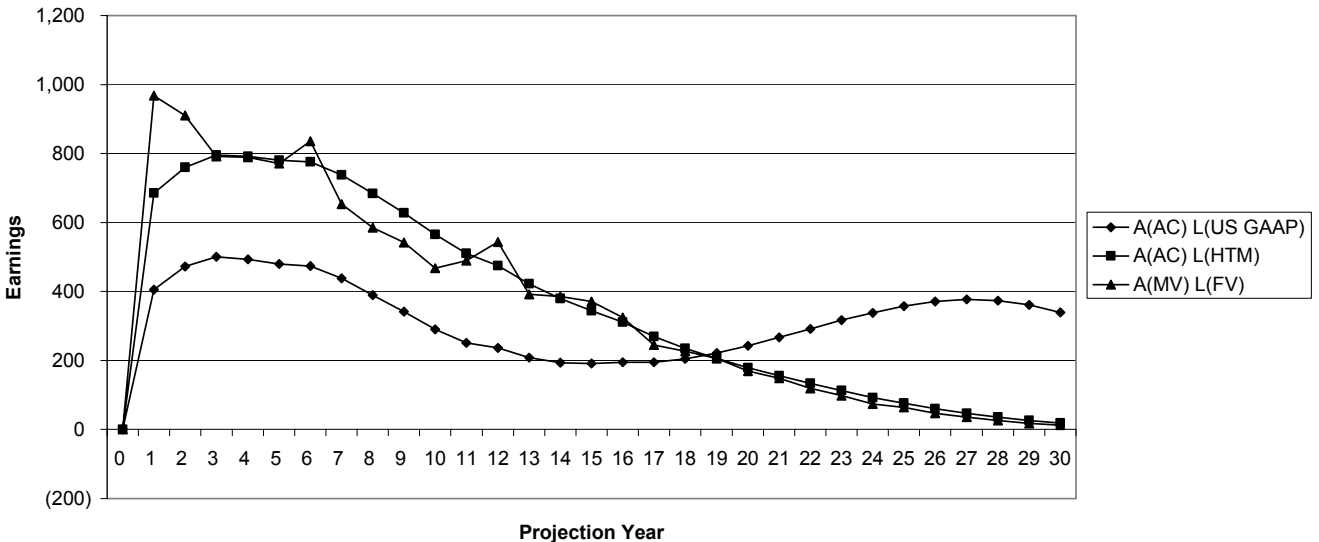
Note that the difference between the earnings under the two methods examined under this paper and the earnings under the current US GAAP example arises from the "back-ending" of risk margins assumed as plausible under US GAAP compared to the liability based MVMs assumed as likely to be typical under the new methods (i.e., the assumption of margins reflecting continuously improving mortality beyond that used in the pricing basis defers the illustrated US GAAP earnings emergence compared to the HTM and FV bases). Guidance from actuarial standard setters may result in greater consistency between the methods.

Chart 12 shows the earnings patterns that would be produced when experience under the policy emerges exactly as expected, both when the assets are measured at fair value (i.e. the assets are designated as "traded" and the liabilities are measured using the "Held to maturity" method or using current US GAAP, as well as when the assets are measured using amortized cost and the liabilities are measured using the fair value method. The earnings patterns are volatile and disguise the underlying real business operation completely. Further, the earnings patterns produced by "book value" liabilities combined with "fair value" assets are exactly the opposite of the

earnings patterns produced by "fair value" liabilities and "book value" assets. **The magnitude of the earnings (both positive and negative) is up to six times the magnitude of the earnings shown in Chart 11 when assets and liabilities are consistently measured. This volatility results from the long duration of the insurance liability.**

Chart 12- Dissimilarly Valued Asset & Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience = Pricing
HTM/FV Valuation Method 2
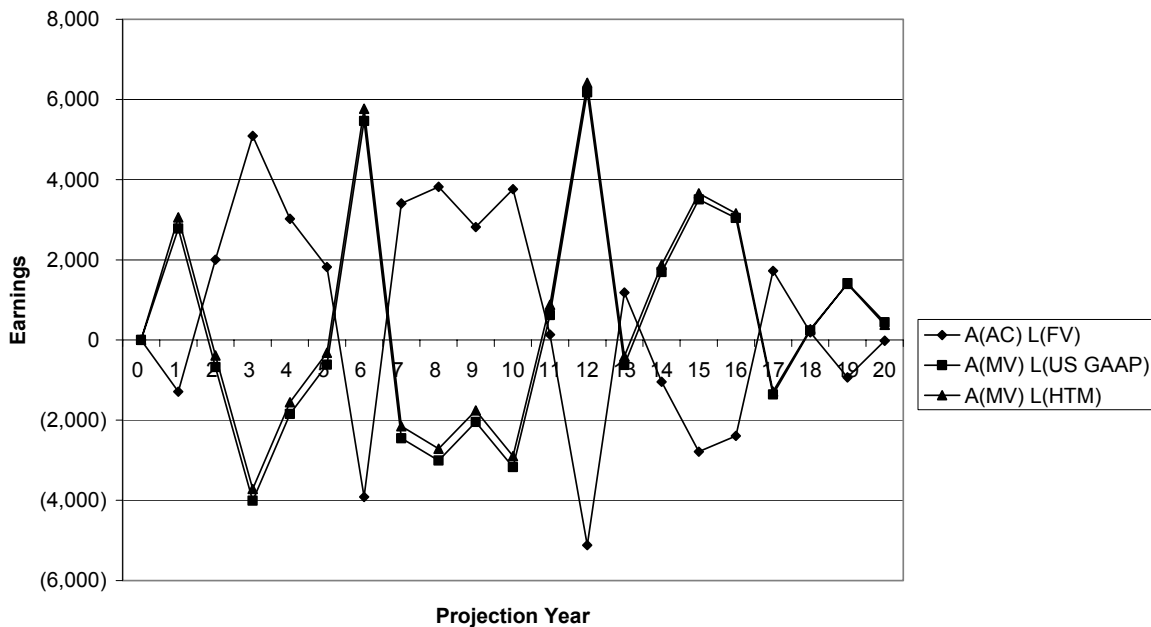
Note that the "financial reporting noise" that dominates earnings results produced using inconsistently measured assets and liabilities makes it almost mandatory that life insurers carefully designate the asset measurement bases at the date of first time application so that the liability measurement bases are consistent. It should be noted that, even if the national insurance accounting treatment permitted in Phase 1 is more consistent with amortized cost concepts, the HTM criteria might be too stringent for entities to designate assets as HTM, unless they know there will be an opportunity to re-designate assets when liability accounting methods change.

Note also that if Phase 2 of the insurance accounting project imposes a fair value liability measurement basis, the Board should consider giving life insurers an opportunity to re-designate assets.

The ACLI and the IAA note that there does not seem to be any current intention by the IASB to require that all financial assets be measured on a fair value basis by the date of implementation of Phase 2 of the insurance contract accounting project. If financial instruments continue to be allowed to be measured on an amortized cost basis by other financial institutions, the question must be asked whether the IASB has an obligation not to require in practice different (and more restrictive) asset measurement methods on the life insurance industry as insurers re-designate assets to produce earnings that better reflect business reality. As long as other financial institutions continue to be allowed to measure assets on other than a fair value basis, there is a strong case for allowing the same latitude to the insurance industry. In such a case, the "Held to Maturity" liability basis advocated by the ACLI would appear to be a strong candidate for consideration by the IASB – particularly given the balance sheet volatility shown in Chart 13.

The IASB might reasonably ask "if consistently measured assets and liabilities measured at fair values gives almost the same earnings patterns as consistently measured assets and liabilities at held to maturity values, why does the life insurance industry feel that it should have the option to use a held to maturity methodology"?

Chart 13 shows the value of the assets and liabilities measured under the held to maturity method compared to the value of the assets and liabilities measured under the fair value method. As can be seen, the balance sheet volatility is more pronounced when the fair value method is used, even when pricing expectations are met and investment risk is minimized. This volatility "noise" is due to changes in interest rates that impact the assets differently than the liabilities. The core issue that this group is still investigating is whether this "noise" is due to additional needed refinements to the fair value calculation definitions or to inherent limitations in the fair value measurement process as it is applied to both asset and liability cash flows. If the approach taken by this project turns out to be the "agreed upon" application of fair value, even in countries with deep, liquid markets, analysts will have to increase the level of sophistication of their analysis in order to achieve an understanding of implications concerning future earnings. This is not to suggest that analysts are incapable of such sophisticated analysis. Rather, it does suggest that an unfair burden may be placed on the insurance industry relative to other financial intermediaries who compete for capital in the same market place. Considerable extra work and sophistication may be required to evaluate the performance of insurers or other financial institutions with long duration liabilities compared to that required to evaluate their closest peer industries and competitors for capital if those competitors continue to use amortized cost methods of reporting.

Chart 13: Balance Sheet Values
Based on Similarly Valued Assets and Liabilities
Corporate Strips Strategy: Invest cash pro-rata to liability CF
Mortality Experience = Pricing
HTM/FV Valuation Method 2
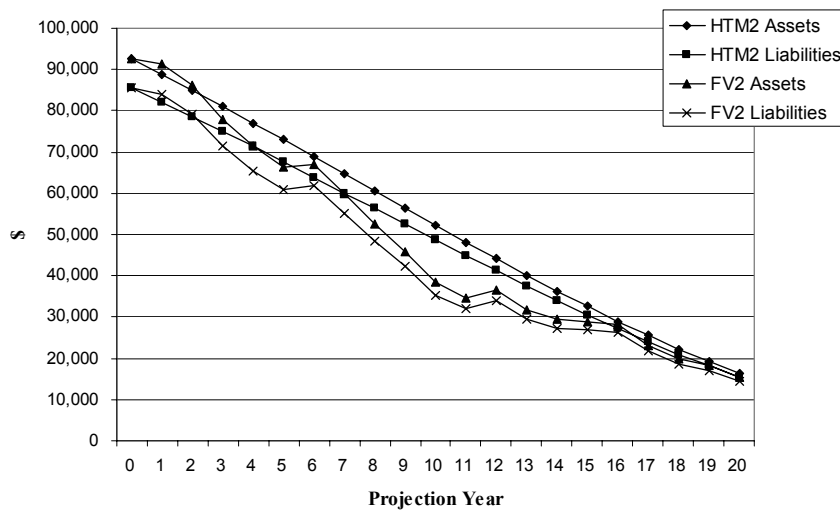
Impact on earnings when assets used by the insurer to back the liabilities have expected cash flows with characteristics that *do not* closely match the expected cash flows from the liabilities.

The previous discussion has focused on clarifying implications where additional financial reporting noise is generated in the absence of expected mismatch risk and while important, the fundamental motivation for FV in insurance has been the desire to show economic reality when insurers make explicit economic "bets" in their investment position. Chart 14 shows one such set of bets where the characteristics of the asset cash flows do not match the characteristics of the liability cash flows (where the liability cash flows include market value margins and associated risk based capital).

Chart 14 - Cash Flow Match at Issue

Long Bond Strategy
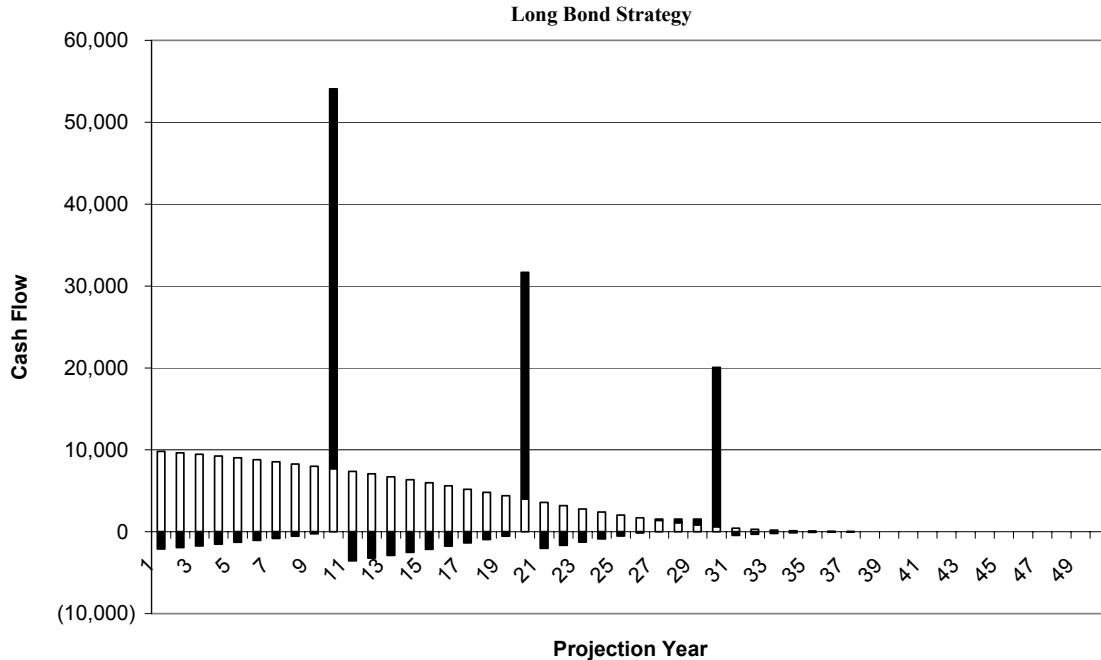
In this example, the insurer invests to produce expected asset cash flows very close to the expected liability cash flows but invests assets covering the MVMs and associated risk based capital in 10-, 20- and 30-year bonds. While concentrating assets covering margins and required capital in only 3 securities is not typical in the industry, the assumption provides a useful, simple, example for research.

To summarize the situation:
- Significant asset cash flows will be reinvested in years 10 and 20. The "bet" will be won or lost by comparing the obtained reinvested asset yields to the initial yields at policy issue.
- The small deficit in asset cash flows in years 1-9 and 11-19 represent additional amounts that must be "borrowed" either at issue or each year as needed. Due to the simplicity of the model project, this disinvestment, while slight, represents the choice of another "bet" that is made each year.
- The "bet" is made on the asset side against a liability, which is fixed and illiquid.

- Using the pattern of interest rates after 1970, note that significant interest rate drops occurred in years 6 and 12 even thought the general trend in interest rates had risen since the issue date.

With 20/20 hindsight, we can see that the year 10 bet was "won". The accounting question is when should one recognize that one has "won" the bet. Chart 15 will help explore that question.

Chart 15 is perhaps the best revealer of the heart of the controversy/uncertainty in evaluating the relative merits of HTM (or current US GAAP) vs. fair value. Both the US GAAP and HTM examples show reasonably consistent earnings when a consistent valuation basis is used for both the assets and the liabilities, but the asset cash flow characteristics do not fully match the liability characteristics. In this example actual mortality experience equals that expected in pricing, so the only major risk is future investment risk. In this case, both valuation bases (AC & FV) exhibit similar earnings patterns, with the FV earnings showing greater differences in the volatility of earnings. Which one is "more" truer to the underlying economic reality? For example, the FV gain shown in duration 12 is only realized if the insurer changes its investment policy to "lock in" the gain through sales and new purchases.

CHART 15 - Similarly Valued Assets & Liabilities
Long Bond Strategy
Mortality Experience = Pricing
HTM/FV Valuation Method 2
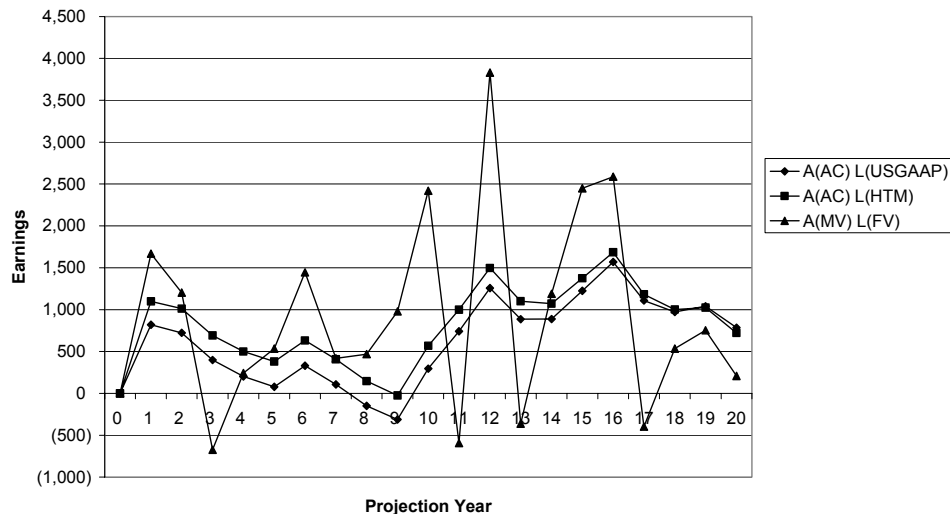
To explore the issue, the ACLI and the IAA intends to produce a chart correlating earnings emergence with changes in interest rate patterns. Initial observations suggests that the FV method produces earnings changes of higher amplitude than

interest rate changes and that the HTM method produces earnings changes or lower amplitude; but that this relationship can change when the yield curve is inverted.

Chart 16 shows again that, when assets are measured using methods that are inconsistent with the methods used to value liabilities, the earnings produced will include spurious volatility. When Chart 16 is compared with Chart 15, it is clear that the inconsistency in asset and liability measurement methods is a more significant driver of the earnings pattern than the underlying mismatch between the asset and liability cash flow characteristics.

CHART 16 - Dissimilarly Valued Assets & Liabilities
Long Bond Strategy
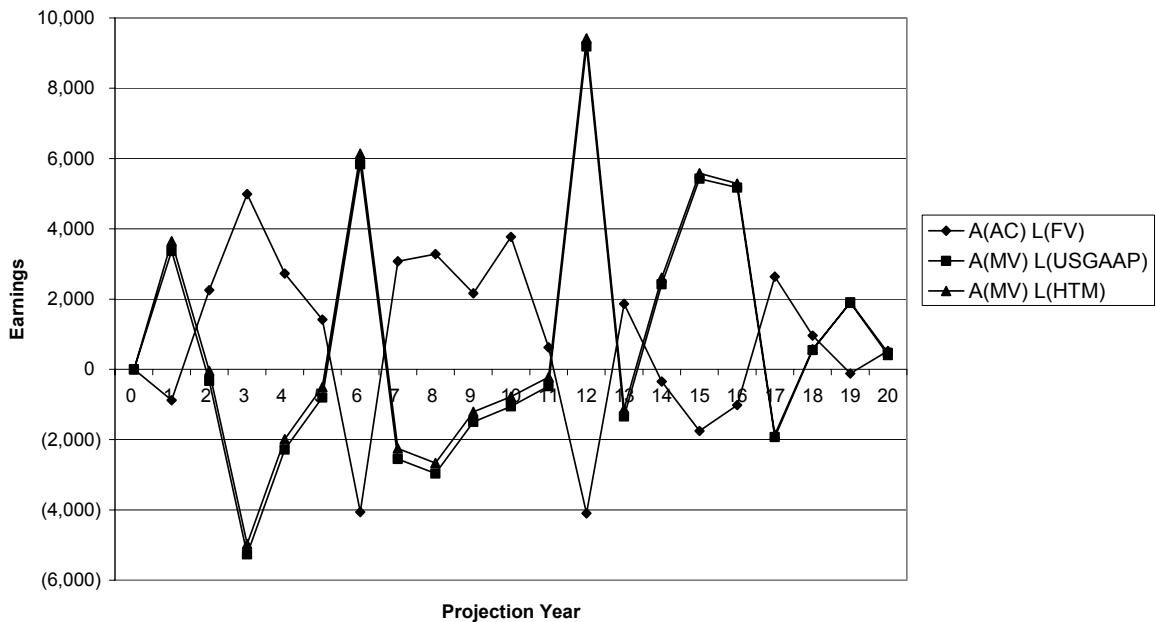**Mortality Experience = Pricing**
HTM/FV Valuation Method 2

APPENDIX 1

Single Premium Immediate Annuity (SPIA) Model Assumptions

Global Assumptions

All calculations were done on a pre-income tax basis. No income tax has been assumed in the product pricing or in any of the financial illustrations. Note that, although the assumptions for the single premium annuity certain are not detailed here, that overall they are similar, other than the life contingencies involved in the SPIA.

Pricing Assumptions

The product was priced to yield a 15% internal rate of return on a statutory (regulatory accounting) basis. The profit load is built entirely into the single premium. Below is a summary of the product specifications and pricing assumptions:

Product Specifications		Pricing Assumptions	
Annual Benefit Payment	$10,000	Survival assumption	1971 IAM table with no mortality improvement or projection scale
Gender of annuitant	Male	Asset earnings rate	8.00% net
		Gross rate	8.38%
		Default rate	-0.35%
		Expenses	-0.03%
Issue age:	65	Commission rate	3.0% of gross premium
Issue date	December 31, 1970	Issue expenses	1.5% of gross premium
Policy fee (load)	$100 at issue only	Maintenance expense	$5 per year
Premium load (equals initial expenses plus profit load to arrive at pricing IRR)	8.24% of premium	Expense per benefit payment.	$2 per payment
		Pricing reserve basis	Statutory (71 IAM, 7.0%)
		Risk capital	5% of reserves
		Pricing IRR objective	15% pre-income tax
		Profit model	Profits released basis

A.   Asset Investment and Yield Assumptions

Investment strategies

Two investment strategies were evaluated.

Investment strategy 1: Invest in corporate bonds with maturities of 10, 20, and 30 years with 50% of available cash flow invested in the 10 year bond, 30% in the 20 year bond and 20% in the 30 year bond.

Investment strategy 2: Invest in a series of corporate bond strips whose expected cash pattern closely matches the expected liability cash flow pattern.

Strips

A strip is a synthetic zero-coupon bond created by selling the rights to each individual cash flow of a coupon-paying bond. A strip's yield can be decomposed from the underlying coupon paying bond. It is equal to the spot interest rate appropriate for the time period until the cash flow takes place. All of the assumptions made for bonds are also applicable to the coupon-paying bond underlying the strip. Any of those assumptions that affect the coupon-paying bond yield (and associated spot rates) will also affect the yield on the strips. For the purposes of this model, strips are assumed to be always available in any amount and any term to maturity.

In all scenarios reinvestment takes place annually. All bonds are purchased at par. Any negative cash flows are handled by selling a pro-rata share of the existing asset portfolio.   Note that selling assets is not consistent with the classification of assets as held-to-maturity that is necessary for valuing assets at amortized cost.   While the model has assumed some sales of assets, the amount of these sales is small. A more complicated mismatch strategy would be needed to avoid any sales at all.   The simplifying assumption is not felt to affect the conclusions reached.

Asset Default Assumption

Defaults are reflected by a reduction to the coupon yield of each bond. The full principle amount is paid without reduction. The annual default assumption is 0.35%. This level default assumption was made to simplify the modeling effort. Defaults are in fact cyclical. However, actual defaults will affect all methods similarly and it is not felt that the simplifying assumption affects the conclusions reached.

Investment Expense Assumption

Investment expenses are reflected by a reduction to the coupon yield of each bond. The annual expense assumption is 0.03%.

Yield Rates

A number of simplifications were made to reduce the modeling effort.

- All bonds are assumed to pay annual coupons.
- The yield spread between corporate bonds and risk-free assets is assumed to remain constant throughout time. As can be seen from the charts and rates shown in Appendix 2, this assumption is not consistent with the marketplace. However, it is not felt that the simplifying assumption alters the conclusions concerning relative earnings.
- Bonds are assumed to exist with terms to maturity beyond the observable yield curve. The yield rates on these bonds were set equal to the rates on the observable bond with the longest maturity.
- Yield rates for bonds with maturities between observable bond yields were linearly interpolated from observable yields.

Asset Valuation Assumptions

Two valuation methods were evaluated.

Amortized Cost   As all bonds were purchased at par, the amortized cost of the bond portfolio of investment strategy 1 is equal to the purchase price of the invested assets on hand plus any outstanding cash balance. The amortized cost of the strip portfolio is equal to the purchase price of the strips on hand plus the amortization of discount from purchase to the valuation date based on the spot yield at purchase.

Market Value   Market value is approximated by discounting all cash flows expected to occur from the current asset portfolio at the spot interest rates corresponding to the corporate bond yield curve that exists at the valuation date.

B.   Liability Valuation Assumptions

Fair Value

The fair value liability is equal to the present value of future contract cash flows using current best estimate assumptions plus a provision for risk known as the market value margin ("MVM"). Two methods of calculating the fair value liability were modeled. Both set a discount rate and then solved for the market value margin that produces no gain or loss at issue, i.e. the initial reserve is equal to the net proceeds of the contract at issue. The first method uses a risk-free discount rate. The second method uses a high-grade corporate bond yield discount rate.   The MVM is expressed as a percentage of the risk capital needed to support the risks inherent in the product. The MVM[2] is –24.5% of risk capital when a risk-free discount rate is used and +7.8% of risk capital when a high-grade corporate yield discount rate is used. Risk capital is

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[2] Negative MVMs are a consequence of using the risk free rate with imposing a zero profit/loss at issue for products expected to be profitable reflecting investment market risk tolerance assumed by insurers.

equal to the pricing assumption of 5% of statutory reserves. It is possible that a negative MVM will not be permitted by the IASB, as it would indicate that a loss exists at issue. However in this case the expected loss (negative MVMs) only results from the required use of risk free rates and does not reflect a true expected loss. As a result, in the results shown here the negative MVM was used.

The risk-free rates are set equal to the yield rates on bonds issued by the US Treasury Department, (also referred to as "Treasuries"). The discount rates used in the calculation of fair value are spot interest rates (rates appropriate for discounting a single cash flow) that were decomposed from the Treasury yields that existed at each valuation date.

The initial survival valuation assumption was set equal to the pricing experience assumption.

Held-to-Maturity
The held-to-maturity ("HTM") liability is equal to the present value of future contract cash flows using best estimate at issue assumptions plus a provision for risk known as the market value margin. HTM is very similar to the fair value method described above, except that valuation assumptions are locked in at issue subject to a loss recognition test[3]. As with fair valuation two methods of calculating the HTM liability were modeled. Again the methods set a discount rate and solved for the MVM that produces no gain or loss at issue. The first method uses a risk-free discount rate. The second method uses a high-grade corporate bond yield discount rate. The MVM is expressed as a percentage of the risk capital needed to support the risks inherent in the product. The MVM is –24.5% of risk capital when a risk-free discount rate is used and +7.8% of risk capital when a high-grade corporate yield discount rate is used (see the above section for a discussion of the treatment of the negative MVM). Risk capital is equal to the pricing assumption of 5% of statutory reserves.

The initial survival valuation assumption was set equal to the pricing experience assumption.

US GAAP
The SPIA product was valued in accordance with FAS 60 as modified by FAS 97 for limited payment contracts. Valuation assumptions for survival and interest rate were set equal to those used in pricing. Provisions for adverse experience deviations ("PADs") were included in the survival assumption (a 1% annual improvement in mortality) and in the discount rate (a reduction in the discount rate of 0.23%). This combination of experience assumptions and PADs produce an initial reserve that is equal to the net proceeds of the contract. Therefore, no unearned profit reserve is needed. A loss recognition test is performed at each valuation date by comparing the

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[3] Note: In both FV and HTM, the loss recognition criteria and methodology may require additional guidance.

carried reserve with a gross premium reserve that uses the then current portfolio earnings rate for discounting.

Loss Recognition

For purposes of this paper, it is assumed that the insurer did not conduct internal credible mortality studies in the period after 1970 and only recognized that its mortality expectations were inadequate when the 1983 annuity mortality table was published. While publication of this table may not have had such a dramatic effect in practice, this example is used as a proxy for "new information" becoming available to an insurer that causes future best estimates to be changed to reflect new adverse information.

APPENDIX 2

| Yields on US Treasury Bonds for Selected Terms to Maturity							
Date	1 year	3 years	5 years	7 years	10 years	20 years	30 years
12/31/1970	5.00%	5.75%	5.95%	6.23%	6.39%	6.28%	**
12/31/1971	4.60%	5.27%	5.69%	5.97%	5.93%	6.00%	**
12/31/1972	5.52%	6.01%	6.16%	6.20%	6.36%	5.96%	**
12/31/1973	7.27%	6.81%	6.80%	6.77%	6.74%	7.29%	**
12/31/1974	7.31%	7.24%	7.31%	7.38%	7.43%	7.91%	**
12/31/1975	6.60%	7.43%	7.76%	7.93%	8.00%	8.23%	**
12/31/1976	4.89%	5.68%	6.10%	6.37%	6.87%	7.30%	**
12/31/1977	6.96%	7.30%	7.48%	7.59%	7.69%	7.87%	7.94%
12/31/1978	10.30%	9.33%	9.08%	9.03%	9.01%	8.90%	8.88%
12/31/1979	11.98%	10.71%	10.42%	10.42%	10.39%	10.18%	10.12%
12/31/1980	14.88%	13.65%	13.25%	13.00%	12.84%	12.49%	12.40%
12/31/1981	12.85%	13.66%	13.60%	13.62%	13.72%	13.73%	13.45%
12/31/1982	8.91%	9.88%	10.22%	10.49%	10.54%	10.62%	10.54%
12/31/1983	10.11%	11.13%	11.54%	11.78%	11.83%	12.02%	11.88%
12/31/1984	9.33%	10.56%	11.07%	11.45%	11.50%	11.64%	11.52%
12/31/1985	7.67%	8.40%	8.73%	9.11%	9.26%	9.75%	9.54%
12/31/1986	5.87%	6.43%	6.67%	6.97%	7.11%	7.28%	7.37%
12/31/1987	7.17%	8.13%	8.45%	8.82%	8.99%	*	9.12%
12/31/1988	8.99%	9.11%	9.09%	9.13%	9.11%	*	9.01%
12/31/1989	7.72%	7.77%	7.75%	7.85%	7.84%	*	7.90%
12/31/1990	7.05%	7.47%	7.73%	8.00%	8.08%	*	8.24%
12/31/1991	4.38%	5.39%	6.19%	6.69%	7.09%	*	7.70%
12/31/1992	3.71%	5.21%	6.08%	6.46%	6.77%	*	7.44%
12/31/1993	3.61%	4.54%	5.15%	5.48%	5.77%	6.40%	6.25%
12/31/1994	7.14%	7.71%	7.78%	7.80%	7.81%	7.99%	7.87%
12/31/1995	5.31%	5.39%	5.51%	5.63%	5.71%	6.12%	6.06%
12/31/1996	5.47%	5.91%	6.07%	6.20%	6.30%	6.65%	6.55%
12/31/1997	5.53%	5.74%	5.77%	5.83%	5.81%	6.07%	5.99%
12/31/1998	4.52%	4.48%	4.45%	4.65%	4.65%	5.36%	5.06%
12/31/1999	5.84%	6.14%	6.19%	6.38%	6.28%	6.69%	6.35%
12/31/2000	5.60%	5.26%	5.17%	5.28%	5.24%	5.64%	5.49%
12/31/2001	2.22%	3.62%	4.39%	4.86%	5.09%	5.76%	5.48%
8/31/2002	1.76%	2.52%	3.29%	3.88%	4.26%	5.19%	5.19%

Source: U.S. Federal Reserve
* The 20-year Treasury bond was not issued between January 1987 and September 1993.
** The 30-year Treasury bond was issued starting in February 1977.

Chart 17 compares the yields on the 1-year and 20-year Treasury bonds. This chart gives a rough idea of the changing shape of the Treasury yield curve. In 1970, the spread yield curve showed a positive slope, i.e. the yields on long-term bonds were higher than the yields on short-term bonds. The yield curve flattened in 1973 and was followed by a steepening of the slope as yields on short-term bonds declined through 1976. Yields on short-term bonds increased dramatically during the late 1970's culminating in an inverted yield curve, i.e. yields on short-term bonds exceeding yields on long-term bonds. The yield curve reverted to its normal upward slope starting in 1981 and maintained its shape as yields dropped through the mid-1980s. Starting in 1988 the yield curve flattened once again. This was followed by a period where yields on short-term rates dropped significantly. During the mid- to late-1990s the yield curve was fairly stable and positively sloped. In 2000, the yield curve once again flattened but has steepened since then.

Chart 17 - Short & Long Treasury Yield Rates
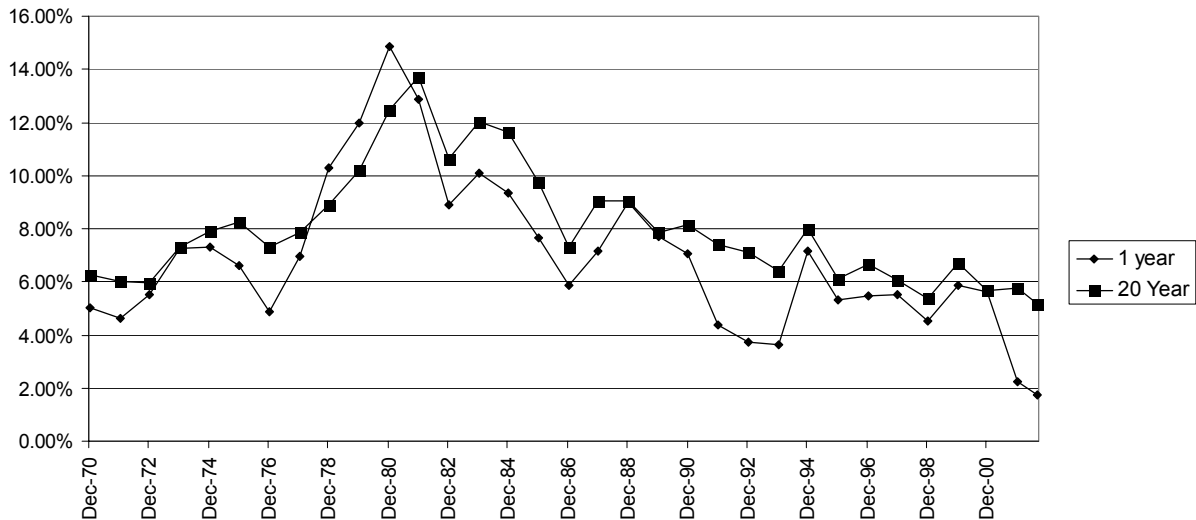
The 20-year treasury bond was not issued during the years 1987 through 1992. The values on this chart for those years are linearly interpolated from 10-year and 30-year treasury bond yields.

Chart 18 - Corporate Bond Spreads
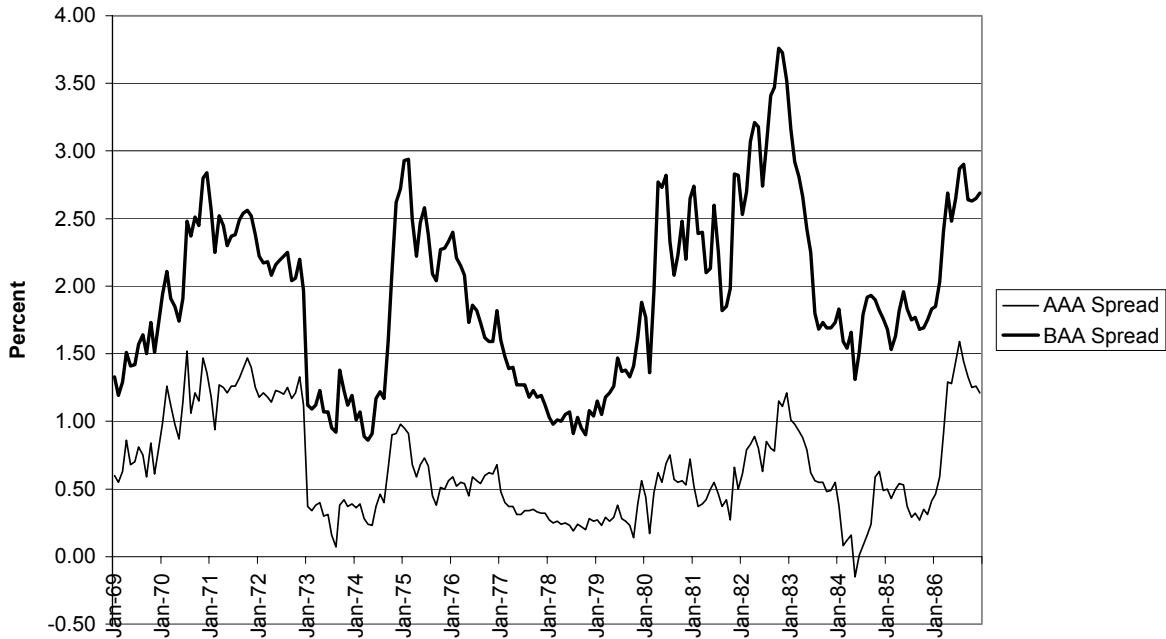**Spread on Long Term Bonds Over 20yr Treasury Yield**
Source: Federal Reserve

Chart 19 - Spreads in range of Aaa to Baa